

Management Recommendations for
Heterodermia leucomelos Hedw.

version 2.0

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SUMMARY

Species: *Heterodermia leucomelos* Hedw.

Taxonomic Group: Lichens (Oceanic-Influenced)

ROD Components: 1, 3

Other Management Status: None

Range: *Heterodermia leucomelos* is known from 16 sites in the range of the northern spotted owl, eight each in Oregon and California; none are on Forest Service or BLM land, although several of the Oregon sites are adjacent to suitable habitat on federal lands. In Oregon, the species occurs in Tillamook, Lane, Coos and Curry counties; in California it has been found in Humboldt and Marin counties. Golden Gate National Recreation Area, Marin County, California is the only known site on federal land. In North America, *H. leucomelos* is a coastal species found in California, Oregon and British Columbia.

Specific Habitat: *Heterodermia leucomelos* appears to be strictly coastal in the range of the northern spotted owl. In Oregon, it occurs on windswept, forested headlands on large Sitka spruce and possibly shore pine. In California, it grows from sea level to 480 m (1575 ft) in moist coastal redwood forests, in open, low coastal scrub, and in dry, open, savanna-like oak woodlands. Some of these woodlands may be influenced by coastal fog. The species is typically epiphytic but occasionally grows on rocks. In hypermaritime localities of British Columbia, it is infrequent over conifers.

Threats: The major threat to *H. leucomelos* is loss of populations resulting from activities that harm the populations or affect their habitat, including altering microclimate and removing colonized substrate, recreation impacts and collecting specimens. Most populations are known from scattered refugia in state parks along developed coastal areas in Oregon and California.

Management Recommendations:

- Manage populations at known sites by maintaining ecological conditions associated with *H. leucomelos*, including stand structure, substrate, and microclimatic conditions.
- Restrict building, burning, collecting specimens and firewood, and any other recreational activities or development that could harm known populations.

Information Needs:

- Verify the status of known populations of *H. leucomelos* and characterize their ecological conditions.
- Determine if *H. leucomelos* meets the criteria for being closely associated with late-successional and old-growth forests.
- Locate additional populations of *H. leucomelos* in potentially suitable habitats on federal land along the immediate Oregon coast.

Management Recommendations for *Heterodermia leucomelos*

I. NATURAL HISTORY

A. Taxonomy and Nomenclature

Heterodermia leucomelos (L.) Poelt was described in 1965.

Synonym: *Anaptychia leucomelaena*

B. Species Description

1. Morphology

This foliose lichen forms loose rosettes of narrow lobes with long gray or black cilia (Figure 1). The white, ascending, extended lobes and long, marginal, often intertwined dark cilia are characteristic. Soredia development is variable; when present, they develop on the distal portion of the underside, which is strongly reflexed and exposed by upward curling of the lobes (Purvis *et al.* 1992). It could be confused with wide-lobed *Physcia tenella*, but that species is P- and is often apotheciate.

Technical Description: Thallus 5-15 cm across, often in loose rosettes forming entangled mats, more or less loosely attached; lobes 0.5-3 mm wide, elongate, mostly dichotomously branched, entangled, sometimes ascending at the tips, sometimes reflexed, with conspicuous, long, gray or black, simply or sparsely branched to squarrosely branched marginal cilia, 5-9 mm long; upper surface ivory white, smooth; lower surface white, channeled, central part arachnoid or powdery and somewhat sorediate; lower cortex not developed. Apothecia not observed. Medulla Pd+ yellow, K+ yellow-red, KC+ yellow-red, C- (Purvis *et al.* 1992).

2. Reproductive Biology

This species reproduces asexually by producing soredia that may be distributed by wind, gravity, animals, or birds. No sexually reproductive structures are known for *H. leucomelos*.

3. Ecological Roles

Little is known about the ecological roles of *H. leucomelos*. This species is used as nesting material by bushtits.

C. Range and Known Sites

In the range of the northern spotted owl, *H. leucomelos* is known from 16 sites, eight in Oregon and eight in California. None of these sites are on Forest Service or BLM land, although several of the Oregon sites are adjacent to suitable habitat on Forest Service and BLM land. In Oregon,

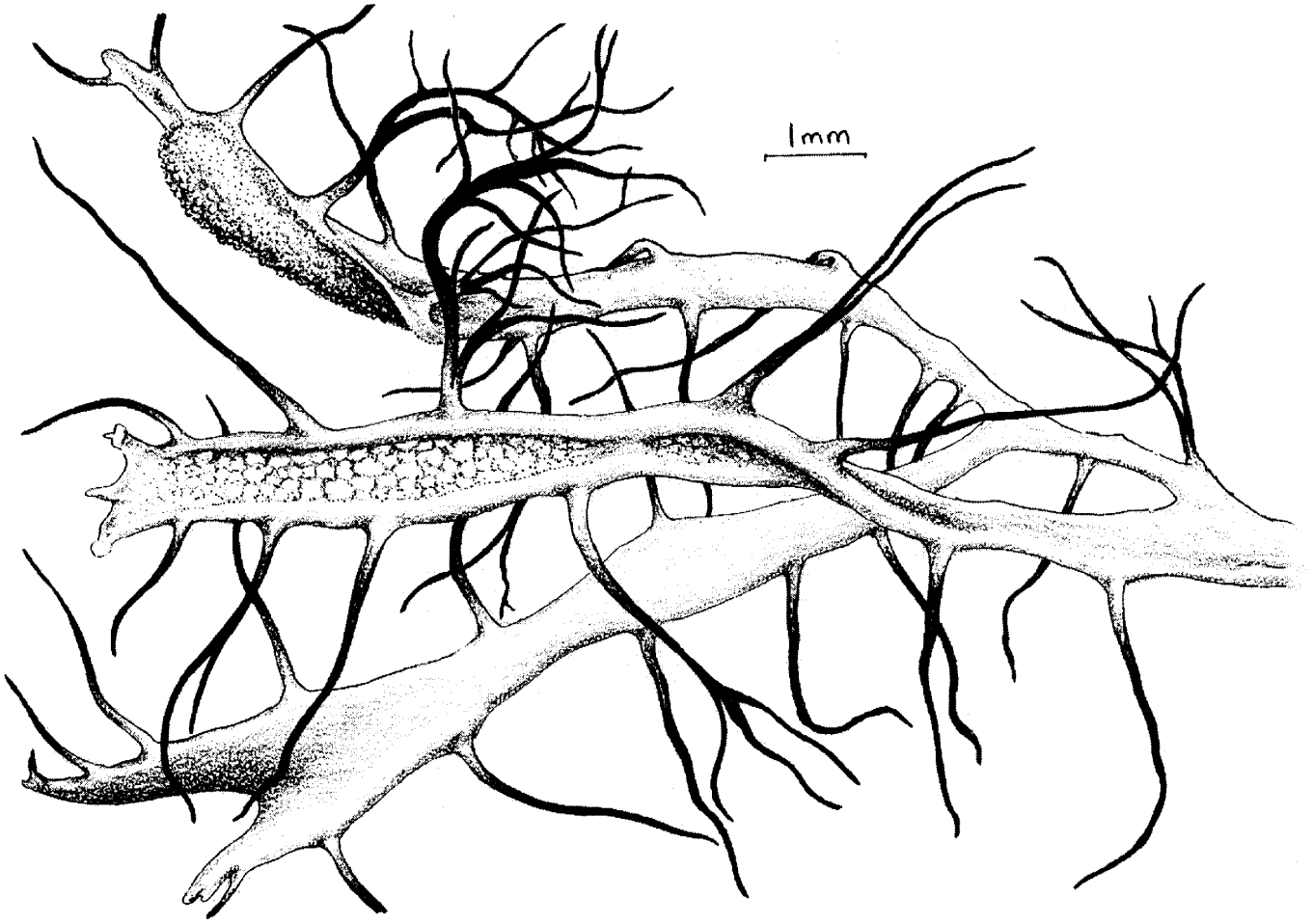


Figure 1. Line drawing of *Heterodermia leucomelos* by Alexander Mikulin.

it occurs in Tillamook, Lane, Coos and Curry counties. In California it is found in Humboldt and Marin counties. Golden Gate National Recreation Area in Marin County, California, is the only known site on federal land. In North America, *H. leucomelos* is a coastal species in California, Oregon, and British Columbia.

In Oregon, the species is present at Cape Lookout State Park and near Sand Lake on land of unknown ownership (McCune *et al.* 1997) (Tillamook County), at Heceta Head State Scenic Viewpoint (Lane County), at Cape Blanco and Cape Sebastian State Parks, and 1 km (0.6 mi) south of Brookings at an unspecified site (McCune *et al.* 1997) (Curry County), at Cape Arago State Park (Coos County), and at Natural Bridge Cove Scenic Point (McCune *et al.* 1997). In California, it is found at eight sites: the Samoa Peninsula, Trinidad State Beach, Lanphere Dunes Unit (Humboldt Bay National Wildlife Refuge, USFWS), near Ferndale, at Clam Beach Vista Point near McKinleyville, and Patrick's Point State Park (Humboldt County), and Tomales Bay State Park and Golden Gate National Recreation Area (Marin County).

The range of *Heterodermia leucomelos* is incompletely circumpolar; it is found in the Americas, England, Europe, Africa, and Asia, and is widespread in the tropics and subtropics. In North America it is known from coastal British Columbia (Goward *et al.* 1994), coastal Oregon, and coastal California.

D. Habitat Characteristics and Species Abundance

In Oregon, *H. leucomelos* grows on small branches of Sitka spruce (*Picea sitchensis*) on forested headlands in the coastal fog zone, and it may also grow on shore pine (*Pinus contorta*) in this habitat. In California, it grows on the trunks and branches of Sitka spruce, on oaks (*Quercus*) and other broad-leaved trees and shrubs, and occasionally on rocks, from sea level to 480 m (1575 ft). It was also found incorporated into a bushtit nest. The species is found in several California habitats, including moist, coastal redwood forests; open, low coastal scrub; and dry, open, savanna-like valley and foothill woodlands dominated by California oak species (Hale and Cole 1988). In British Columbia, it is infrequent on conifers in open hypermaritime localities (Goward *et al.* 1994). In Europe--where it is rare, local, and declining--*H. leucomelos* is found on mossy rocks or moss-lichen turf on sunny, exposed, coastal cliffs, and rarely on trunks and branches of wayside, broad-leaved trees (Purvis *et al.* 1992). Species abundance is unknown.

In the range of the northern spotted owl, *H. leucomelos* appears to be rare and confined to a narrow coastal habitat. This species might also be found at inland sites with coastal influences or conditions, such as riparian areas, moist valleys, and fog-intercept ridges.

II. CURRENT SPECIES SITUATION

A. Why Species Is Listed Under Survey and Manage Standard and Guideline

Heterodermia leucomelos was considered at risk under the Northwest Forest Plan because of its rarity and limited distribution in the range of the northern spotted owl. At the time of the

FEMAT viability analysis, this species was known from five sites in the range of the northern spotted owl (USDA and USDI 1994a,b).

B. Major Habitat and Viability Considerations

The major viability consideration for *H. leucomelos* is loss of populations resulting from management activities that harm the populations or alter their habitat.

C. Threats to the Species

Threats to *H. leucomelos* are actions that disrupt stand conditions necessary for its survival, including treatments that harm local populations by removing coastal Sitka spruce and other colonized substrates; alter the light, moisture, or temperature regime; or degrade air quality. Recreation-related activities such as building trails and shelters and collecting firewood could adversely affect populations, as well as collecting of specimens. Because this species is apparently restricted to the immediate coast, particularly in Oregon, altering potentially suitable habitat could inhibit establishment. This species is vulnerable to loss of habitat because of increasing development along the coast.

D. Distribution Relative to Land Allocations

Currently, *H. leucomelos* is not known from Forest Service or BLM land in the range of the northern spotted owl, although there is potentially suitable habitat.

III. MANAGEMENT GOAL AND OBJECTIVES

A. Management Goal for the Species

The goal for managing *Heterodermia leucomelos* is to assist in maintaining species viability.

B. Objectives

Manage known sites on federal lands by maintaining habitat, forest structure, occupied and potentially suitable habitat, and microclimate conditions associated with *H. leucomelos*.

IV. HABITAT MANAGEMENT

A. Lessons From History

The importance of lichens in forested and other habitats is recognized globally. Conversion of old-growth forests into young managed stands leads to a significant reduction in epiphytic lichen biomass, which in turn will probably affects nutrient cycling in forests and may have negative consequences for animals that use canopy lichens as food, shelter, or nesting material (Esseen

1996). In the range of the northern spotted owl, bushtits use *H. leucomelos* as nesting material.

B. Identifying Habitat Areas for Management

All known sites of *H. leucomelos* on federal lands in the range of the northern spotted owl are identified as habitat areas where these management recommendations should be implemented. A habitat area for management is defined as suitable habitat occupied by or adjacent to a known population.

C. Managing in Habitat Areas

- Manage habitat areas on federal land by allowing existing habitat conditions to persist and evolve naturally.
- Restrict firewood collection.
- Restrict collecting voucher specimens for scientific purposes, unless they are found in litterfall.
- Restrict off-road vehicles, bicycle and foot traffic in coastal ericaceous shrub habitats without trails.
- Minimize the extent of the clearing of shrubs and trees along trails during maintenance activities.
- Develop practices to route human use away from the populations (*e.g.*, divert trails and roads). Trampling of shrubs, removing of trees or branches, introducing non-native species by seed dispersal or planting, compacting tree or shrub roots which support the species, are all examples of potential recreational impacts.

D. Other Management Issues and Considerations

Information from reported sites suggests that *H. leucomelos* may not be a species closely associated with late-successional and old-growth forests. For a species to be appropriately listed as a Survey and Manage species, it must first meet the criteria established for designating a species as closely associated with late-successional and old-growth forests (USDA and USDI 1994a [Table IV-6] and 1994b). This issue should be addressed by a regional coordinating body.

- Share information with state and private sectors to further activities directed at the conservation of *H. leucomelos*.
- Request the Oregon and Washington State Natural Heritage Programs track and store information for *H. leucomelos* across all land ownerships.

V. RESEARCH, INVENTORY, AND MONITORING NEEDS

The objective of this section is to identify opportunities to acquire additional information which could contribute to more effective species management. The content of this section has not been prioritized or reviewed as to how important the particular items are for species management.

The inventory, research, and monitoring identified below are not required. These recommendations should be addressed by a regional coordinating body.

A. Data Gaps and Information Needs

There are several federal parcels of coastal fog zone habitat with populations of other rare oceanic lichens with similar habitat requirements as *H. leucomelos*. These sites are identified as potential suitable *H. leucomelos* habitat, and should be evaluated for the presence for this species. They are Sutton Creek and Eel Creek, Gwynn Creek and Sand Lake (Siuslaw National Forest), BLM Heceta Dunes Area of Critical Environmental Concern; a small BLM parcel near Cape Lookout State Park, and other coastal BLM parcels.

- Determine if *H. leucomelos* meets the criteria for being closely associated with late-successional and old-growth forest established in FEMAT.
- Revisit known sites to verify the status of known populations, determine the extent of the populations and abundance, and to characterize habitat conditions.
- Determine the land ownership of the population on the Samoa Peninsula.

B. Research Questions

- What are the dispersal rates and mechanisms of *H. leucomelos*?
- Which habitat characteristics and ecological conditions are necessary for survival of *H. leucomelos* propagules?
- What limits dispersal and establishment of propagules and colonization of suitable *H. leucomelos* habitat?
- Is *H. leucomelos* sensitive to air pollution?
- Which suites of other rare lichens are found with *H. leucomelos*?
- How do populations of *H. leucomelos* respond to successional changes and associated changes in microclimate?

C. Monitoring Needs and Recommendations

Monitor the effects of recreational activities on populations of *H. leucomelos* in habitat areas.

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